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NEW SERIES, NO. XLII.

APRIL, 1830.

ART. I.—1. *Library of Useful Knowledge*. Nos. 1—60. 8vo.
2. *The Library of Entertaining Knowledge*. Vol. I. and
Vol. II. Part I. 18mo.

[Published under the Superintendence of the Society for
the Diffusion of Useful Knowledge. London. 1828—
29—30.]

SOME one of the British journals, in speaking of the prolific press of the English Society named above, says, rather freely, ‘We wonder where Brougham can find the men to write all these tracts.’ Now we must as freely say, though without designing the least disrespect, certainly, to that distinguished individual or his praiseworthy coadjutors, that it seems to us they might find them anywhere. The truth is,—and the truth in this case is a matter of so much disappointment and regret to us, that we cannot suppress the expression of it,—there is a most lamentable want of tact, not to say talent, in these publications. No doubt the first series is sufficiently learned, that is, the scientific part of it, though we cannot ‘wonder,’ certainly, that men should be found to do this work for a fair consideration. But the want of talent appears in this, that there is no adaptation, in these tracts, to the purpose for which they were avowedly written. They are wholly unfit for the *diffusion of knowledge* among the mass of the people, or among the mass of general readers. And when this deficiency was confessed, though not remedied in the current series, as it ought to have been, the moment it was discovered; when a new series is brought forward, as if starting anew would better help the matter; when, we say, a new series

(the Library of Entertaining Knowledge) is got up, on purpose to correct the preceding error, what have we but a collection of children's stories about Menageries and Forests, descriptions that look like a traveller's memoranda of trees and plants; rambling anecdotes about dogs, cats, and jackalls; and all this, with scarcely any pretension to philosophical classification or instructive inference. We have had, but this moment, as we were writing, an exact illustration of the character of this series. We were expressing our disapprobation about this work in conversation; and the answer was, 'But don't you think it is a very good thing for children?' 'It is indeed a good thing for children,' was our reply, 'but it was designed for men.' The title 'Entertaining' we were in truth afraid of, from the first; and it seems to have impressed its character upon the tracts, almost to the exclusion of all other objects. They may do good, no doubt; we are not sorry to have them for our youth to read as entertaining books; but we cannot admit, that these or any publications of the British Society are examples of what can be done to further its great project.

Our brethren across the water must pardon us if we express ourselves somewhat strongly; for we have looked to them for the best thing that could be done; we have rejoiced at their great and noble undertaking; we have actually had visions of the good they were to do, and, confess it we must, we are grievously disappointed. The truth is, the first failure seems to have led to a separation of things which it was their very business and intention to unite. Of scientific books we had enough before; entertaining and intelligible treatises, too, such as Goldsmith's and St Pierre's; but the object of the Society was to give these matters a form sufficiently scientific for the best purposes of instruction, and yet to render them intelligible and interesting. Now its first series of tracts had enough of scientific classification, but was not intelligible to the mass of readers. To remedy this, the Society has issued a second series; but, by this arrangement, being unwilling to trench upon the ground of the first, they have cut themselves off from a large portion of the field of interesting and useful instruction; and that, too, the best portion. For instance, in the first series the subject of Vegetable Physiology was treated of; a subject which yields the most interesting results for mental and moral contemplation. But

in the second, as this ground was preoccupied, we have only an account of the general aspects and qualities of trees and plants; all very proper, and such as might have answered a very good purpose, if it could have been introduced to clothe the dry and barren limbs of the first. So again, we have *Animal Mechanics* in the first series, and the forms and habitudes of animals in the second. Now it does seem to us, that a work may be produced, with enough of scientific classification and detail on the one hand, and yet, on the other, intelligible, interesting, exciting and satisfying inquiry, gratifying the natural curiosity of the human mind, directing it to the practical applications of science, and exalting it to that devotion which is its great end. It might indeed be a work, and one of the noblest works, of united learning, genius, taste, and piety.

We have lately spoken of the new *American Almanac*, a work highly valuable in its general objects and character. There is one portion of it, however, against which we must enter, with qualifications, the same complaint, as against the first series of the English publications. The *Second Part*, on 'the Calendar, Celestial Changes, and Astronomical Phenomena,' is that to which we refer. There is an interesting series of brief chapters on these subjects; but here and there, when the matter becomes more deep and difficult, the writer certainly forgets that apparently hardest of all things to keep in mind, how many degrees he stands above those whom he undertakes to instruct. We refer, for instances of this observation, to portions of the chapters on the 'Calendar,' on the 'Year,' on the 'Solar and Lunar Cycle,' and on the 'Tides.' We will consent that any intelligent, but general reader, shall be umpire between us and the learned author of the *Second Part*, on the point which we have respectfully suggested for his attention.

The publications before us, with many others of the same character, invite our attention to a great and interesting project, which is nevertheless so novel and unprecedented, that it is probably regarded by some as extravagant and visionary, and by others, as unimportant and indifferent. A defence of this project, in these points of view, claims attention, for reasons that extend far beyond any limited sphere of our own, and in fact beyond our own country. It is indeed one of the peculiar and great undertakings of the age, to communicate scientific knowledge to the whole intelligent portion of the

mass of society. The energies of the social world, aroused, as they never were before, to the work of general improvement, are now, especially in England and in this country, directed particularly to this object. Three distinct series of publications, having, as one of their leading objects, the advancement of this enterprise, and bearing upon their title-pages some of the greatest names of England, are now issuing from the British press; and the Lyceums, which are rapidly springing up among us, are likely, if the first efforts are successful, to spread over the whole country. The records of Greek and Roman literature give no example or hint of productions or projects such as these. The splendid fables of Arabic learning and genius, though royal halls gave audience to them; the mystic lore and cumbrous philosophy of the East, furnish nothing that can enter into the comparison. The Lyceum, that was first built on the pleasant banks and among the shady groves of the Ilissus, where Aristotle taught philosophy, was designed only for a few studious youths. Those sequestered retreats were never invaded by the footsteps of the Athenian artisan or tradesman, nor by fruiterers or husbandmen from the fields of Attica. The noble project of bringing down high philosophy and holy science to the mass of the people, has been reserved for this age. It is a novel enterprise among mankind. It is an unwritten page in the history of the world. It is a project, we do not think it too much to say, which never before entered into the conceptions of men; for it is an attempt to pluck from the sun, 'in the highest heaven of philosophy,' the Promethean fire, to burn on the common hearth-stone in the humblest abodes of mortals.

The error of past ages has been, to accumulate power, wealth, learning, and even religious responsibilities and trusts, in a few hands. Monopolies have not been confined to property; they have extended to knowledge too. Science, as well as religion, has said to the mass of mankind, 'Stand by thyself, for I am holier than thou.' The paths of the scholar have led far away from the beaten track of common life. He has conceived himself to have little to do with the world at large; he has had few sympathies with it; he has felt little interest in it. He has compared science indeed to the light of heaven; he has talked eloquently about its properties; but he has talked in figures; he has not actually felt that it is one of the lights which men may daily walk by. In-

deed, these primary interests and blessings of the world, to which we have referred, have not failed of diffusion because they have not been duly appreciated ; but because they have been held by their possessors in a sort of selfish estimation ; because they have been considered as too good for the mass of mankind, or because it has been imagined that they would be soiled by a common use. But it is the strong tendency of all liberal thought and feeling, at *this* day, to bring every human acquisition to a practical account ; to make men in politics their own rulers, in religion their own guides ; to spread wealth, by abolishing the laws of entail and primogeniture, into general competence and comfort ; and, as the best pledge and safeguard for all the rest, to call down knowledge, from its proud and inaccessible heights, to be the companion and cheerer of the lowliest toil and of the humblest fireside. *Diffusion* is the watchword of the age ; and unless the spread of intelligence keeps pace with that of power, of wealth, and of religious liberty, it will become the motto of universal disappointment and defeat.

It is certainly an interesting question therefore, whether this tendency of things on so large a scale, and whether the professed undertaking to further it, in the department of the sciences particularly, promises to be either successful or useful. Is not the project to diffuse a knowledge of the sciences, visionary, impracticable ? Or, if it is not, if it can succeed, is there a prospect of much good to be effected by it ? These are the questions before us. And there is the more occasion to discuss them, because this practical character of the age, of which we have spoken, is sometimes falsely considered in such a light as to furnish specious, but unsound objections to our views ; and because there is, in many minds, a peculiar skepticism about the practicability and expediency of diffusing generally a knowledge of the sciences.

The first feeling, in many persons, to whom this sort of knowledge is proposed for their acquisition, is a vague feeling of utter incompetency to the undertaking, or of the absolute impossibility or impropriety of the thing,—a feeling, as if it were proposed to them literally to scale the heights of heaven ; or, at any rate, to put themselves altogether out of their place and sphere. ‘ We cannot know anything about these matters. They are for scholars to understand. They are to be learnt in colleges. If you attempt to teach *us* things of this

sort,' say many with an incredulous air, 'you must take patience with you at any rate.' It takes some patience to listen to the objection, we confess. For why cannot men, and all men, know? And why should they not? The objects of this kind of study are God's works, works which were expressly designed to be studied and admired by all his rational creatures; and, as religious reasoners, so far from admitting these things to be out of the province of the mass of mankind, we should say, that the world is not, and never will be, *right*, till they are generally understood. It is not in a fair and right state for its moral probation. But we have occasion, at present, only to urge the general propriety of these pursuits. If the object of God's works on earth had been mere temporary accommodation and comfort, less than all the infinite wisdom displayed in them would have sufficed. Plants, for instance, could have been caused to grow without their present curious structure and beautiful appearance. It is as evident that the world was made to display to its inhabitants the wisdom, as the goodness of its Creator. It is reasonable, therefore, that they should study it. No inquiry could be more proper for men, and for all men.

And why, we repeat, can they not know? The objects to be examined are all around them; the subjects of study are the very elements with which they are every moment conversant; the instruments are their senses; to see, to hear, is to know. The times for study are all times that are not necessarily engrossed with other pursuits; when they take a walk, when they look around them upon the works of nature, especially when they are at leisure. Why cannot a man, who sits down before his evening fire, spend an hour in reading a few paragraphs that will teach him the curious and beautiful theory of combustion? Why cannot any man read enough upon the nature and changes of the atmosphere, the clouds, and the seasons, to be in the habit of reflecting philosophically on what is passing around him, instead of receiving, as passively, in this respect, as the post before his door, the visitation of the elements? And as to time, 'the time that makes a wise man is the time that makes a fool; and the counters, with which the untaught lose the game, are the same with which the skilful win it,'—says, or should say, some proverb of the East or of the West. It is strictly true in this matter, that 'time and chance happen to all men'; but all men do

not know how to use them. The thing to be learned is ‘not in heaven, nor beyond the sea, but it is nigh us.’ It is said that Linnæus, when abroad one day in the fields with his pupils, laid his hand upon the green turf, saying, ‘he had that under his hand, whose consideration might justly occupy all of them for a considerable portion of their lives. He verified this assertion, by showing that within that space there were thirty-four different species, either of grass or moss, or insects, or animalcules, or varieties of mineral.’

‘Yes, but all this is nothing,’ say our objectors. ‘Science is what we are talking about.’ Nay, but this *is* the very thing. The foundation of the sciences is observation. The business of philosophy is not to construct theories, but to state facts; not to deal with mysteries in mysterious language, but to deal with plain matters in intelligible language. Science, instead of being a high and abstruse mystery, is a clearer up of the mysteries that lie in our daily path. We have no doubt, that the casual observations of many practical and plain men, if they had been properly and philosophically noted down in their own minds, would have laid the foundation for much useful philosophy. The judgment, for instance, which seafaring persons form of the weather, which seems at once as sure and as mysterious as instinct, is no doubt founded on actual and careful observation. If the observer had been, in this respect, a philosopher; if he had been able fully to state the grounds of his almost unerring predictions, he might have furnished far more valuable aid to the science of meteorology, than is now given in dry tables of temperature, wind, rain, and sunshine. And if the same observations were made on the land, it would not be difficult to form a *Farmer’s Manual*, or a *Traveller’s Directory*, which, in many cases, would be of great convenience and utility.

When science is mentioned, the minds of many persons are at once carried away from what is around them, to strange diagrams and curious and costly apparatus. These things have their place and use, it is true. Diagrams are essential in the mathematics; and apparatus is a needful auxiliary to scientific observation. But observation need not wait for them. The inquirer may begin his researches without stirring from the spot where he stands. He has only to revive the curiosity of childhood, a curiosity unhappily dulled by repeated disappointment; he has only to ask, What is this,

and why is that? and he has begun the work of scientific philosophy. If he has any zeal in these inquiries, he will procure or invent some simple apparatus to aid him; not to say that our Lyceums are now likely to make the necessary provision for his wants.

It was thus, and without these resources of modern enterprise, that our Franklin and Rittenhouse advanced through the first steps that led to their distinction as philosophers. We do not expect that many among us will rise to the same eminence; but we do say, that, with only a moderate portion of the same inquisitiveness, many may attain to a degree and kind of knowledge, that will give a new character to their minds and a new complexion to their lives, that will open treasures in nature, more truly valuable than the most fertile soil or the wealthiest mine. And to this end, we repeat, they are not to wait for lectures or apparatus, but to begin those inquiries which will as certainly lead them to reading and to experiments, as cause will ever lead to effect. It has been proposed as a good method of instructing children, to confine their attention to the apartment they are in, and to question them with regard to the nature and origin of everything in that given space. Such a course, we believe, never fails to interest them. And thus, if a man would question himself with regard to all the objects within the circle of his vision, he would find enough to elicit his curiosity, to task his reason, and give direction and employment to his hours of reading.

‘True,’ some will say, ‘but all this requires a great deal of thinking; and our business is to labor.’ But why not join them? Need a man stop turning over the furrow of his field, because he observes the chemical properties of the soil? Must the builder pause in his work, because he proceeds upon a full understanding of the principles of mensuration and architecture? Does any artist labor less assiduously or effectually, because he understands not only the practice, but the philosophy of his art? Does the merchant lay his plans less wisely, because he brings into his contemplation a sagacious and comprehensive view of the principles of trade? The truth is, that in all these cases knowledge does not hinder, but helps a man. Precisely as the philosophical. we had almost said, the imaginative system of the double entry helps the accountant, or as the science of geometry aids the surveyor, or of navigation, the mariner. And in a simple

journey upon the land, may not the traveller, without any interruption, take a philosophical survey of the country he is passing through, notice its soil, its productions, its capabilities, its mineralogical character? Even in judging of its scenery,—and no man would be thought so negligent as not to know whether he had passed through a fine or a dull tract of country,—even here, there is use enough, if he understood it, for the philosophy of taste. And with a mind thus employed, he would not only not be retarded, but he would find many sources of pleasurable interest; he would be saved from some portion of the tedium of a journey; and he would not need such frequent resort to the coarser stimulants which the tavern furnishes.

‘But we do not know how to class these things,’ still say our men of doubt and difficulty; ‘we have no books, and we do not know how to begin; or if we do begin, we do not know how to proceed without instruction.’

There is some ground for these objections. Nature, at first, presents itself to the observer as an indigested mass. It is desirable that he should have some elementary works to aid him at the outset, to answer immediately those first inquiries, which we have represented as the beginning of philosophy. And we must confess, that there is here a deficiency, which we trust is yet and ere long to be supplied. Most of the Manuals of Natural Philosophy, of Chemistry, of Mineralogy, Zoology, &c. are designed for scholars. We want something of a simpler character. But what then? shall we do nothing for ourselves, because everything is not done to our hands? The Lyceums which are rising around us, we trust, are to furnish an answer to the question. Some among us have undertaken to instruct and to aid one another. And let it be observed in this connexion, that those who shall, in these institutions, give the results of their inquiries in the form of dissertations or lectures, who shall, with a generous zeal, study for that purpose, cannot, in their communications, use too ‘great plainness of speech.’ On this point, also, it is important that they should not put one thing for another. Prolixity is not plainness; nor are many words to be mistaken for much simplicity. Perfect clearness of ideas, no matter in how few words, provided they be intelligible, is the first qualification of a lecturer.

But again, let it be asked, shall we not read books, be-

cause they are not precisely what we want? Few books would be read or studied, by this rule. Besides, there are portions of most of the Manuals that may be read, with understanding and to advantage, by almost every one. And what if these things, in the outset, cost some study? What if some pages must be read over twice and thrice before they will be understood? If any one thinks these matters not worth the attention; if he is willing that the vision of nature should pass before him as an idle show; if he cares not to understand the works of infinite wisdom, it is not to him that this subject is to be addressed. If he has any intelligent concern or reasonable zeal on this subject, he will not think it too much to spend some of his leisure hours in the reading and study of those authors that will lay open to him the secrets of that world of science, which as yet, to most men, is truly an invisible and unknown world.

‘Ay,’ says some skeptical observer of this undertaking, ‘you may address whom you will; you may say and do what you can; but you will never accomplish much. It is all a Utopian scheme; one of the forms of modern extravagance; an attempt to carry people out of their condition, to make philosophers out of ploughmen, and lecturers out of laborers. Let us rear up a community of plain, industrious men, who understand their business; and let those who please, dream of a nation of dreamers like themselves.’

There are some predictions which have no other chance of accomplishment, than their own credit yields. If the spirit of society falls in with language of this sort; if it is the tendency of the times to doubt or to condemn all projects for intellectual improvement; if skepticism is stronger than conviction, and ridicule is more weighty than men’s interests, then we admit that this great and noble undertaking of the age may fail. But even then we shall not admit, that it is at all necessary it should fail. We maintain, that, if society would seriously and earnestly set about the work of self-improvement, there are intellect and ability of every sort enough, and a hundred times more than enough, to accomplish all that we desire. If we could promise that every leaf of scientific knowledge should turn to a bank note, though of the humblest denomination, the work would be secure of the desired fulfilment. If men would seek knowledge, not as they seek silver, but with a hundredth part of the same zeal, we should not fear

for the result. If, for opening the sources of innocent and elevated enjoyment, society would expend the tenth part of what it now pays for excess, vice, disease, ruin, and death, it would be enough; enough to build Lyceums everywhere; enough to procure apparatus and libraries; enough to pay lecturers; enough to meet all the expenses of the most liberal, or of the most extravagant projects, in this cause.

The substance of the objections we are now considering is, that the undertaking to disseminate scientific knowledge among the mass of the people, is visionary, that it is unsuitable to the state and objects of society. But let us consider what it is in this matter that is visionary. Not the knowledge proposed to be gained; not the treasured wisdom of nature; not the pleasure of contemplating it; not the aptitude of the human mind for such an employment; not the capacity of *common* minds to receive the elementary truths of science, for they are very simple. What then is visionary in this project? That, undoubtedly, which has caused every improvement that has been projected in the world to be denominated visionary. It is the novelty of the undertaking. It is this that marks it as chimerical. Unless, indeed, it may be said that one part of mankind were *made* to be ignorant and to work; and another part made to be wise and to rule them. On this summary classification and appointment, it is true, we easily comprehend what is meant by 'rearing up a community of plain and industrious men, who understand their business.' But, we trust, it is not visionary for men also to understand their own nature, to reverence their Creator, and to look, with earnest inquiry, into those proofs of power, wisdom, and benevolence, which he has spread before them. There cannot be a steam-boat, a power-loom, a fire-engine, the model of a carriage for a rail-way, or a newly invented machine of any valuable description, presented for inspection, but it is thought a mark of reasonable curiosity and enlightened judgment to examine and understand it. And shall we pass through this crowded world of skill, contrivance, wisdom, and beauty, and scarcely bestow upon it a casual thought?

But the point we are now considering opens to a wider discussion. The general question of utility here naturally offers itself. We have thus far been endeavoring to meet the question, whether anything can be done. Let us now

go to the inquiry, whether any good is likely to be done, provided the undertaking can succeed.

What is useful cannot be pronounced to be visionary. And yet what it is that constitutes the utility of any measure, or of any acquisition, may be a question, on which there will be all that difference of opinion, which shall make the project we advocate appear to some to be a visionary undertaking, and to others to be the soundest wisdom and the best policy.

With some, nothing is useful but what immediately tends to increase the property, comfort, and outward well-being of the people. And be it admitted, with all the readiness and latitude that can be desired of us, that these are important objects ; yet they are not the only things that come into account, as affecting the welfare of society. But admit the importance of these interests. We believe that no one estimates them, singly considered, at a higher rate than we do. We are tempted to say, that one of the greatest evils in society is, that people are not well enough off. Not that there is a want of means, for Providence everywhere is bountiful ; but these means are so distributed, and the maxims and habits of society are such, that the struggle of human interests and necessities is too hard ; that, through human misdirection, the temptation to dishonesty, ambition, and mutual strife, presses harder, if we may venture to say so, than it was meant to press. We have reasons then, beyond all worldly prudence, for wishing that competence and comfort may be increased in the world.

But here we say, and might argue much at large, did our space permit, that the spread of scientific knowledge, a knowledge, in other words, of the mechanical powers and of the capabilities of nature, would tend, and directly tend, to bring about this result. Science, it has been often said, is man's empire over nature. It is this that makes a large part of the difference between the barbarian, who is subject to the elements, and of the civilized man, who commands them. It is this that, in civilized countries, is, every day more and more, rendering nature subservient to man's use, for food, medicine, clothing, habitation, fuel, convenience, comfort.

These, it may be said, are the labors of the learned. But Arkwright and Fulton were not learned. Besides, why should that which, in the hands of the studious, is so powerful an instrument, be so useless in the hands of the active

and laborious? We know that it is not. And it is demonstrable, as a matter of the plainest inference, that he, who works not as a senseless machine, but as an intelligent handicraftsman, who understands the powers he wields, and the elements and materials he works upon, will have a great advantage in his knowledge. The artisan, with this qualification, will be constantly improving his tools and the productions of his skill, and shortening the processes of his labor. The farm will be certain, other things being equal, to be better cultivated, and to be made more productive, by a scientific agriculturist. He will turn the stock, as well as the soil, of his farm to greater account, with the knowledge that books of science will give him. How many horses have been ruined by ignorance in the farrier of the part he operates upon. The foot of the horse is connected with the leg by muscles and ligaments, which answer the purpose of a fine elastic spring, that saves the animal from the shock, which every step would otherwise give him. This effect is aided by the expansion of the hoof, and by the descent, between the two parts of it, of a soft, muscular substance, technically called the *frog*. Now, if the shoe be placed too far back, or be formed so as to contract the foot, it will interfere with this admirable provision of nature; and lameness will ensue. In the building of houses, again, scientific principles are indispensable, and undoubtedly a thorough understanding of them would enable the carpenter to improve his plans, and to facilitate the execution of his task. But there is one evil that especially calls for a scientific remedy, and that is, the evil of ‘smoky houses.’ There are principles, if we are rightly informed, on which every chimney may be constructed, so as certainly to draw smoke; and any one may convince himself of this by the fact, that a Franklin stove is an invariable remedy for a smoking chimney. And yet, in many places, if not generally, more than half of the chimneys are so built, as to inflict this lasting evil, this century’s calamity, upon a whole household. The fuel, that is expended, either to make a stronger draught by increasing the fire, or to heat rooms with half-open doors; the colds, rheumatisms, and various diseases induced in this way; the irritation, the actual ill temper occasioned by such circumstances, constitute, all together, no small item in the troubles and afflictions of domestic life! And all this, because one class of our artisans do not understand, in this particular, the philosophy of their business!

Life, it is often said, is made up of little things. And how much of the discomfort, the diseases, the irritations, and even vices of society, is owing to little things, to little defects of precaution, skill, or knowledge, is a serious question. This is not the place to enter into the subject. But of the minor evils that beset us, 'at home and abroad, in the house and by the way,' we are persuaded that a fair proportion might be corrected or avoided by a little knowledge and consideration of the laws of nature. We see human beings, as they now are, instead of going on harmoniously with the system of things around them; instead of conforming to the laws of their own constitution; instead of acting with decision, wisdom, and skill, in circumstances expressly designed to call forth these qualities,—we see them at war with nature, and not only so, but contending at a disadvantage, floated and buffeted by the elements, without the needful safeguards, misled by appearances, troubled by mistakes, overcome by accidents, often sick from the want of care, and sorrowful for the want of objects, though the world is full of objects.

Yes, full of them; and we now come to consider the question of utility in another point of light. That, emphatically, is useful which contributes to the happiness of the mind. And if this is true, then ideas, reflections, thoughts are to be set down on the scale of utility, and are to be set highest on that scale. Though not reckoned in the ledger, though not gathered into the granary, nor deposited in the warehouse; though neither manufactured, nor bought, nor sold,—yet thoughts are useful. Nothing is so much to a man as what he thinks. 'As a man thinketh so is he,' and, especially, so is he happy or miserable.

And yet there is, with many, a kind of regular and set exclusion of the mind itself from the estimate of human welfare, and an exclusion, by the same rule, of knowledge from the objects that are worthy of a distinct, professed, and practical attention, among the mass of mankind. Knowledge, indeed, is allowed to be useful, but it is useful as being auxiliary to some more valuable, some visible acquisition. Thus the knowledge of the lawyer, of the physician, of the merchant, is acknowledged to be useful; but useful, all the while, as a commodity in the market. That is the only popular vein of it. And there is no doubt that the very words, *utility*, *advantage*, *good*, always, in popular use, relate to outward possessions. And, of course,

with this state of mind, all efforts and combinations to obtain such possessions, all banking associations, insurance companies, fur companies, copartnerships in trade, compacts of all sorts to lay a grasp on the 'main chance,' are the most reasonable things in the world. Nothing is visionary here but what fails; not the South Sea Company, till the bubble bursts; not the cotton or woollen factory, till the stock falls fifty per cent. But a Lyceum, a combination among the people to obtain knowledge, and especially scientific knowledge, a knowledge of such things as the air, and the light, and the stars, an ideal good, a bubble at the outset, a thing that cannot be put on the file of bonds and deeds, nor served up in the feast, nor made anything of in any way,—why, says our wise man, the project is chimerical! And forthwith he begins to talk about Utopia, and Oceana, and Arcadia, and sundry other things that have no real existence.

But knowledge is itself a good, and a real good. And the Lyceum that, in ten years' successful operation, adds twenty per cent. to a man's knowledge and enlargement of mind, will be, at least, as much valued by him, as the bank that, in the same time, adds twenty per cent. to his estate. The sort of knowledge that comes under the denomination of scientific, it is true, must, at least a portion of it, be sought for its own sake; and the defence of it is, therefore, to be put on that ground. We say, then, that the knowledge of nature, in those respects which have the least to do with men's business, is of itself a most delightful acquisition. To stand amidst the works of the wonderful Architect, as their admiring interpreter; to look around, not with the dull, unconscious gaze of mere animal sensations, but to comprehend, in their qualities and uses, the things that we behold, the air, the sunshine, the storm, the lightning; to see all things rising in their order, and moving in their harmony; to stand, as did the first man, and 'call by their names' all things that 'pass before us,' is to take one of the noblest and happiest positions on earth; and fittest, too, for the lord of this lower creation. The bare classification of outward objects is of itself a great pleasure. It is this, in part, that accounts for the enthusiasm of the mineralogist. Mineralogy, at first view certainly, is a very dull science. And yet its votaries take journeys on foot; endure storms, cold, hunger, and weariness; traverse extensive districts; scale lofty mountains with an eagerness that seems

almost like mania ; and all this they do, not to put gold in their purse, but to put a few useless stones in their cabinet. Now, whatever be the cause, here is undoubtedly a great deal of pleasure. The huntsman has not a keener ; no, nor the miser, nor the voluptuary. And the objects which yield this satisfaction are abundant, are common, are everywhere to be found. The stones in the street, the dull walls by the wayside, present to the eye of the mineralogist well-known and interesting forms and qualities.

But if the dullest things in nature yield this pleasure, what must its brighter, its more beautiful, its living forms ? its plants of every shape and structure, and birds of every plumage, and animals that sport in all its elements and regions ? Let our Wilson tell,—for our country was his by adoption,—who lived among the birds, made them as it were his companions, and understood their notes, as if they had been the voices of his children. Let the venerable Blumenbach of Germany tell, who has pursued the study of natural history till the period of eighty, with undiminished enthusiasm and delight. Or, to take singly the phenomena of vegetation,—what a secret world of wonders is there in every plant ? It seems unfortunate that any man should pass through one spring season, and understand nothing of these most curious and beautiful processes, that are going on all around him. Growth, vegetable growth, which to the ignorant is a bare and naked fact, to the scientific eye is a history, a whole history of things, the most interesting to every intelligent mind. Survey it throughout, from its foundation silently and mysteriously wrought in the dark and senseless earth, till it rises up to the stately plant, or the towering forest tree ; examine its interior structure ; trace the firm and tough fibres that give it strength to resist the storms amidst which it flourishes ; observe the ducts and channels carefully laid in it, to convey streams from the rich fountains of life below ; mark its numerous cells, those secret laboratories of nature ; and then consider the liquid sustenance, carried to its topmost bough and its outermost leaf, with no forcing pump to raise it, and conveying each particle to the exact place and position where it is needed, by a process of secretion that seems like mystery, and mystery it is ;—survey this exquisite and wonderful workmanship, and who, we ask, would not know something of all this ? Who would not give a little time to procure so great

a satisfaction? Who can be content to pass through the world in ignorance of these works of his Creator?

But there is another view of the intellectual good to be derived from such sources. Scientific knowledge supplies objects to the mind, that help to preserve it from stagnation, *ennui*, and melancholy. Something has been before said about the want of time for scientific inquiries. To this it has been answered in general, that there is time enough if it be well husbanded and improved. But to put this answer in the form of an indisputable fact, we say, that a great deal of time is actually occupied with reading among the mass of the community around us. There are many persons, who are not students, but who spend some hours every week in the perusal of the light and fictitious works, that crowd, almost to the exclusion of all others, the shelves of our circulating libraries. Now one great evil of this sort of reading is, that it trains no mental faculty, and awakens no intellectual effort; that, although it arouses the passions, it leaves the mind passive to the impressions made upon it. No intellect is more void of activity, more fatally dull, than that of the worn-out novel-reader. Scientific researches would produce a wholesome action, a salutary curiosity; and the gratification of this taste would not be confined to the pent-up room and the waning lamp, but would attend the cheerful walk, amidst the light and breezes of day, and the rich and fair scenes of nature.

There is much need of this kind of excitement. Most people want more to think about, and especially more that is useful, interesting, and worthy of a rational nature. In truth, there is a great deal of dulness, of mental sluggishness, in the mass of society. If it were not for the newspaper and the novel, our people would not know how to wear away the heavy hours allotted to them. But these do not sufficiently answer the purpose of excitement, not to say that one of them does not answer it in the best manner. Besides, our country is more destitute than any other of public entertainments, of public and professed holidays; and many of the simple resorts of this nature, the 'bees' and 'huskings,' are disappearing from our farm-houses, giving place, it may be feared, to grosser stimulants, to more solitary and sadder pleasures. All this, it is true, may not be so much felt in the immediate circle of commercial pursuits, of active and en-

grossing trade, and hazardous speculation. But it is felt abroad in the land, where no deep risks or keen rivalships agitate the people, and no evening assemblies, no theatres nor shows invite them. The long winter evenings pass wearily and heavily in many a habitation. This is a people, then, one might think, ripe for the great modern project of improvement, ripe for Lyceums and library societies; too intelligent to sit down stupidly and think of nothing, and as yet too little supplied with objects. And if the more active classes, in our cities and villages, less need such resorts as we propose, on one account, they need them more on another. For it were well, if it were possible, to calm down these agitating excitements of trade. It were well, if by any possibility it could be done, to make people feel that there is something valuable in this world besides money. It would be a truly republican project, too, to bring all classes of our citizens together, in the equally ennobling pursuit of knowledge.

Do our people, then, crave entertainment? Nature stands before them as a mighty storehouse of materials. The showman, the manufacturer of fire-works, has nothing like this. It would furnish to the people one grand and perpetual *fête*. It would open scenes of enchantment, and miracles of art, beyond all that theatre, or royal palace, or the fabled halls of oriental magicians could offer. The entertainment, too, would be comparatively cheap. Less than what it now costs to dress up artificial scenery,—and yet, if the theatre could be the noble school that it ought to be, we should not object to it;—less than what is given to pay for the feats of jugglers, mountebanks, and dancers; and less, far less than what it costs to distil the wholesome fruits of nature into poison, would be sufficient to unfold the secrets and wonders of this mighty treasure-house.

In the light of this contrast indeed, were it fully displayed, the contemplation of human folly would be perfectly overwhelming. If all that has been done, and expended, and lost, by the abuse of nature to purposes of gluttony, intemperance, luxury, vanity, and vitiating entertainment, had been devoted to the knowledge and cultivation of nature; and then, if all the boundless sum of treasure, toil, and life, that has been sacrificed in bloody and barbarous wars, had been converted to the same rational and beneficent use, it is impossible to describe or imagine the improved and happy condition in

which the world would now be found. If all human power, wealth, activity, zeal, and ingenuity had been fairly brought to bear upon the world's improvement and welfare, a scene would have been presented, to which the fabled Arcadia of the poets would be as the simple field to the well cultivated garden. The earth would indeed have been as 'the garden of God.' Means of communication, means of comfort might have been provided; broad and beaten pathways might have been opened through mountains and forests, to convey the blessings of civilization, and the greetings of affection, to the uttermost regions; fair cities and marble palaces and temples might have risen in every wilderness; rich groves and bowers of peace and contentment might have covered every plain, now barren and desolate, and oftentimes stained with blood. There need have been no ill-constructed habitations, no damp and loathsome hovels, no scantily provided board, no gaunt and haggard visage of hunger, no 'looped and windowed raggedness'; and, comparatively, there need have been no disease, nor vice, nor misery,—at least, no such frightful masses of these evils,—in the whole world. And yet, when we propose to turn the human mind to a consideration of the powers and uses of nature, when we propose to raise it from these dreadful and wasting delusions to knowledge, virtue, and religion, we are asked, as if the world had never proceeded upon any other rule,—'What use is there in all these things?'

We say, to religion; and upon the tendency of a knowledge of nature to awaken a rational, habitual, and fervent piety, we must add a few remarks in close.

Among the qualities of the human character, it seems to us that piety has been, least of all, wisely and successfully cultivated. And we speak of the cultivation of piety now, as one of the great *interests* of mankind. This is not the place to enter into the reasons, why it is to be thus regarded. But that it is a spring of lofty sentiments, a direct source of happiness, a promoter of virtue in its noblest forms; that it is a needful refuge for human weakness, and an interpreter of what would otherwise be life's troubled mystery; that it is, moreover, a most reasonable homage of creatures to their Creator, we shall consider as positions undisputed by those to whom we choose at present to address ourselves.

But although it is thus the interest, and, we might say, the

grandest form of the great interest of every human being, piety, it seems to us, among the body of mankind, has been one of the most inoperative, inconstant, and factitious of all sentiments. Let theologians dispute as they may about human depravity, total or partial, it must be conceded by all, that the Being, whose presence is ever and everywhere most truly with us, whose presence is constantly and most strikingly manifest in every object around us, is least of all present to men's thoughts. Now one reason of the deficiency of that great sentiment, for which, as we believe, there is a natural aptitude in the human breast, is, we doubt not, the want of knowledge, the want of enlarged and distinct ideas. It is not enough to say, in the general, that God is wise, good, and merciful. It is not enough to teach this on set times and occasions. It would not be enough to do this concerning any other being, in whom we wished to awaken a deep and habitual interest. We want statements, specifications, facts, details, that will illustrate the wonderful perfections of the infinite Creator; and these details require to be such as will make their impression every day and hour, as will mingle their suggestions with all the toils and cares of business, and record their instructions on all the paths of life. Men, it is often said, and too truly, are so engrossed with occupation, so oppressed with labor, so agitated by competition, and perplexed with difficulty, that religion is precluded and kept out of sight. What is needed then is, that religious reflections should be mixed up, if possible, with the mass of human pursuits, should start up unbidden on every side, should make their impression, as all deep and abiding impressions are made, by constant and unforced repetition.

Now, it is precisely this want that is supplied by the scientific knowledge of nature. Not that men would think less of their Bible, for thinking more of this knowledge. It would help to explain their Bible, and give a loftier meaning to many of the noblest passages of 'Holy Writ.' Nature, too, is as truly a manifestation from Heaven as the Scriptures. 'Tis elder Scripture, writ by God's own hand.' The knowledge of it could scarcely fail to be a most powerful means of devotion. It is worthy of remark, that those philosophers, in general, who have been students of nature, have been distinguished by a pious reverence for the Author of nature. How without that 'madness,' which the poet charges upon 'the un-

devout astronomer,' could they escape it? It follows, as inference from premises, as cause from effect. A man, who reads a work of genius, if he comprehends it, unavoidably admires its author. How could a similar, but loftier sentiment fail to arise from a study of the volume of nature !

But this volume has an advantage, in one respect, over all other volumes. It is, as we have already intimated, 'ever open before us, and we may read it at our leisure.' Nay, we must read it, if we understand its language, almost in spite of ourselves. 'Its line is gone out through all the earth, and its words to the end of the world.' Now of this various, unceasing, omnipresent communication, knowledge, knowledge, we repeat, is the great interpreter. It would make the world a new sphere to us, a sphere of new and nobler influences. Nothing that we remember, besides the direct effect of religious emotion, ever so effectually and entirely placed us in a 'new world,' as the simple philosophical history of vegetation. Knowledge would write lessons of piety on every leaf. Every 'turf would be a fragrant shrine.' The earth, in its light, would rear ten thousand altars around us. The air we breathe would be incense. And heaven, beyond towering arch or temple's dome, would bear us to contemplations, glorious, sublime, unspeakable, of the adorable Creator.

ART. II.—*Curiosity ; a Poem, delivered at Cambridge, before the Phi Beta Kappa Society, August 27, 1829.* By CHARLES SPRAGUE. Boston. J. T. Buckingham. 8vo. pp. 30.

IF we may believe certain high authorities, it was once thought that poetry required peculiar natural powers ; such as are not given to all men, at least in the same measure. The poet, in order to pass muster, was required to possess the highest attributes of mind and the best affections of the heart ; to have an eye wide and searching, quick to discern the magnificence and glory of nature, and able to look down into the depths of the soul. Beside the delicate sensibility which voluntary retirement could give him, he was expected to have an acquaintance with all the principles of human action, from the power which lifted and swayed the stormy passions of